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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/822,797	04/13/2004	Hironori Satoh	163852021100	2903

7590 03/07/2007  
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EXAMINER
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TOTH, KAREN E

ART UNIT	PAPER NUMBER
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3735

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/07/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

ED

<b>Office Action Summary</b>	Application No. 10/822,797	Applicant(s) SATO ET AL.	
	Examiner Karen E. Toth	Art Unit 3735	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-16 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 4, 5, 6, 8, 9, 12-14, 16 is/are rejected.
- 7) ☒ Claim(s) 2,3,7,10,11 and 15 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |                                                                                                                                           |                                                                                         |
|-------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                                               | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                                      | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>11/1/04, 4/13/04</u> . | 6) <input type="checkbox"/> Other: ____.                                                |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

1. Claims 1-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claims are directed to obtaining a characteristic point of a multi-dimensional derivative; the term "multi-dimensional" is not clearly defined in the present application, since it may be "any N-th derivative". Technically, a first derivative may be considered an "N-th" derivative, even though it is not multi-dimensional. For the purposes of examination, "multi-dimensional derivative" will be considered to apply to second and higher derivatives.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 4-6, 8, 9, 12-14, and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by O'Rourke (US Patent 5265011).

Regarding claim 1, O'Rourke discloses a pulse wave measuring apparatus comprising a first calculation unit that calculates a characteristic point ("MAX3rd") of a multi-dimensional derivative of one beat of a pulse wave; and a second calculation unit

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that, when a certain characteristic point is present in a predetermined interval of the beat of the pulse wave (that is, between SMAX and INCISURA in figure 16), calculates one of an early systolic component (the first shoulder) or a late systolic component (the second shoulder) corresponding to the interval using the characteristic point (column 8, lines 53-68).

Regarding claim 4, O'Rourke further discloses the predetermined interval comprising a falling phase from the highest point of a pulse wave ("SMAX") and the notch point of the wave's next highest point ("Incisura"), and a characteristic point ("MAX3rd") being present in the falling wave interval (see figure 16), where the characteristic point is used to calculate the late, or reflected, systolic component (column 8, lines 57-68).

Regarding claim 5, O'Rourke further discloses that the maximum point of the pulse wave is used to calculate the late systolic component when the characteristic point (MAX3rd) is close to the maximum pulse wave point (SMAX) (figure 16; column 8, lines 53-55 and 57-62).

Regarding claim 6, O'Rourke further discloses that the notch point (INCISURA) is used to calculate the late systolic component when the characteristic point (MAX3rd) is close to the notch point (figure 18; column 8, lines 55-57 and 63-68).

Regarding claim 8, O'Rourke further discloses that the characteristic point may be a maximum of a third derivative wave ("MAX3rd"; column 8, lines 47-52).

Regarding claim 9 and 16, O'Rourke discloses a program product causing a computer to execute analysis of a waveform that is a superposition of two waveforms,

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where the execution comprises a first calculation step of calculating a characteristic point ("MAX3rd") of a multi-dimensional derivative of one beat of a pulse wave, where the point is a maximum of a wave of a third derivative (column 8, lines 47-52); and a second calculation step of calculating, when a certain characteristic point is present in a predetermined interval of the beat of the pulse wave (that is, when MAX3rd is close enough to SMAX), an early systolic component (the first shoulder) and a late systolic component (the second shoulder) corresponding to the interval using the characteristic point (column 8, lines 53-62).

Regarding claim 12, O'Rourke further discloses the predetermined interval comprising a falling phase from the highest point of a pulse wave ("SMAX") and the notch point of the wave's next highest point ("Incisura"), and a characteristic point ("MAX3rd") being present in the falling wave interval (see figure 16), where the characteristic point is used to calculate the late, or reflected, systolic component (column 8, lines 57-68).

Regarding claim 13, O'Rourke further discloses that the maximum point of the pulse wave is used to calculate the late systolic component when the characteristic point (MAX3rd) is close to the maximum pulse wave point (SMAX) (figure 16; column 8, lines 53-55 and 57-62).

Regarding claim 14, O'Rourke further discloses that the notch point (INCISURA) is used to calculate the late systolic component when the characteristic point (MAX3rd) is close to the notch point (figure 18; column 8, lines 55-57 and 63-68).

***Allowable Subject Matter***

4. Claims 2, 3, 7, 10, 11, and 15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior art of record fails to anticipate or make obvious the subject matter of claims 2, 3, 10, and 11, including, *inter-alia*, measuring a characteristic point of a multi-dimensional derivative of a pulse wave during a predetermined interval of a rising phase of the start to maximal point of one wave, and calculating an early (or primary) systolic component using a characteristic point found during the predetermined interval.

The prior art of record fails to anticipate or make obvious the subject matter of claims 7 and 15, including, *inter-alia*, measuring a characteristic point of a multi-dimensional derivative of a pulse wave during a predetermined interval and calculating early (primary) and later (reflected) systolic parameters based on the characteristic point, where the point is a minimum of a third derivative wave.

***Conclusion***

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US Patent 6616613 to Goodman, which discloses a similar invention.

US Patent 6017313 to Bratteli, which discloses a similar invention.

US Patent 5199438 to Pearlman, which discloses a similar invention.


US Patent 5265615 to Frank, which discloses a similar invention.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karen E. Toth whose telephone number is 571-272-6824. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Marmor, II can be reached on 571-272-4730. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
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